THE SUMMER AND WINTER WEATHER OF SELECTED CITIES IN NORTH AMERICA [1]

By George F. Howe

Many studies have been made of the variations of individual factors in weather, such as rainfall, temperature, humidity, and others. It is not, however, each factor varying by itself which makes up our weather, but the several factors in their daily combinations. And these combinations are important from many points of view.

Thus, doctors sometimes have occasion to send patients to places with a certain kind of climate, but have no definite information as to where that place may be. An insurance company fortified by a map of weather types would be able to set rates on certain sorts of weather insurance better than a company which "takes a chance." One does not feel as well, nor can he "turn out as much work" on a hot, rainy, quiet day as he can on a moderate, fair, quiet day. Hence, for the purpose of giving a clear picture of the climate of a place, a statement of the frequencies with which well-known types of weather occur is essential.

In the present study, 13 types of weather were chosen from the standpoint of human comfort, and for the five-year period 1917–1921 the percentage frequencies of the occurrence of each type were found for various cities in North America. The 13 types were derived from important combinations of 4 classes of temperature, 2 classes of precipitation (in lieu of humidity and cloudiness, for which daily data were not readily available), and 2 classes of wind. The types and their corresponding symbols are as follows:

Type	Symbol
Hot and rainy	Hr
Hot, fair, and windy	Hfw
Hot, fair, and quiet	Hfq
Moderate and rainy	Mr
Moderate, fair, and windy	Mfw
Moderate, fair, and quiet	Mfq
Cool and rainy	Clr
Cool, fair, and windy	Clfw
Cool, fair, and quiet	Clfq
Cold, fair, and windy	Cdfw
Cold, fair, and quiet	Cdfq
Cold, snowy, and windy	Cdsw
Cold, snowy, and quiet	Cdsq

The criteria upon which the determination of the above types was based were as follows:

Temperature was classified upon the basis of the daily mean: A daily mean over 68° F. was classed as *hot*. A daily mean between 50° F. and 68° F. was classed as *moderate*. A daily mean between 32° F. and 50° F. was classed as *cool*. A daily mean below 32° F. was classed as *cold*.

Windiness.—A day was called windy (in all countries except Canada) if there was a five-minute period with the wind at 25 miles or more an hour, as shown by Weather Bureau anemometers. In Canada the wind velocity is recorded three times a day, at about 8 a. m., 2 p. m., and 8 p. m. (seventy-fifth meridian time) and these velocities are published, while in other countries only maximum wind velocity is recorded. It is likely that the wind was not at the daily maximum velocity at the time of any of the three readings at Canadian stations, so a record of 20 miles per hour at any observation determined a "windy day."

However, owing to differences in exposure of anemometers in different cities, too much weight should not be put upon the wind data.

Rainfall.—As rainfall was chosen to indicate humidity and cloudiness, however roughly, a day was called moist (rainy or snowy) if 0.01 inch or more of rain or (melted) snow fell at any time. Upon examination of the records, it was found that a rainy day was in but very few cases accompanied by a wind of more than 25 miles per hour, so days of this type were not put under a separate head. A wind of 25 miles per hour accompanying snow is a condition decidedly uncomfortable to man.

The period used.—A five-year period was decided upon as the least which could represent the prevailing characteristics of a place. The latest complete five-year period, 1917–1921, was used. These years include some abnormal periods with striking departures from the usual conditions, such as the winter of 1917–18 and the summer of 1918, but the cold periods have compensatory warm ones.

Sources of the data used in this study.—The synthesized data presented in this paper are for summer (June, July, August) and winter (December, January, February). Though data were available for spring and fall, they were not reduced for this preliminary investigation. The daily values of temperature, rainfall, and wind velocity, which have been combined, were kindly furnished by the Government weather services of Canada, the United States, Mexico, Cuba, and the Panama Canal Zone. Only the Canadian, United States, and Panama data were available in published form in the Canadian Meteorological Reports (Ottawa), the Climatological Data for the United States by Sections, and the Monthly Weather Reports, respectively. Since some of the data were missing for Canadian stations and could not be obtained without a great deal of trouble to the Canadian weather service, these were left out. Wind velocity data for the United States were not given in the published reports, and were therefore tabulated at the Weather Bureau office in Washington. The data for Mexico, Cuba, and the Panama Canal were reduced by Dr. J. E. Switzer, who made them available.

Method of procedure.—For each station the data from which were to be used, a separate sheet was prepared showing the three winter months and the three summer months, with the different weather types at the top and the days of the month at the side. The types were then counted by noting their occurrences from the published reports of temperature, wind velocity, and rainfall. The number of occurrences of each type during the month was then found. This process being repeated for each winter month and each summer month for five years for each station, the results were recorded in tables such as the following:

	Phoenix, Ariz.												
	Hr	Hfw	Hfq	Mr	Mfw	Mfq	Clr	Clfw	Clfq	Cdfw	Cdfq	Cdsw	Cdsq
January, 1917				4	--	9	6		12				
1918				2	1	10	2		16				
1919				2	1	17			11				
1920				2		18	3		8				
1921				2		20	3		6				
Total				12	2	74	14		53				

The totals for the three months were recorded at the bottom of the sheet and the percentage of each weather type was found graphically from these totals. Table 1 was prepared on the basis of this material and the data also transferred to maps, percentages being entered at the locations of the stations. Maps were made also for each factor alone: i. e., the percentage of hot days, fair

days, windy days, etc., for summer and winter. Examples of the mapping of weather type distribution are presented in Figures 1–3.

In Figure 4 is presented a summary of the weather-type percentages applied to Herbertson's map of the major natural regions of North America.
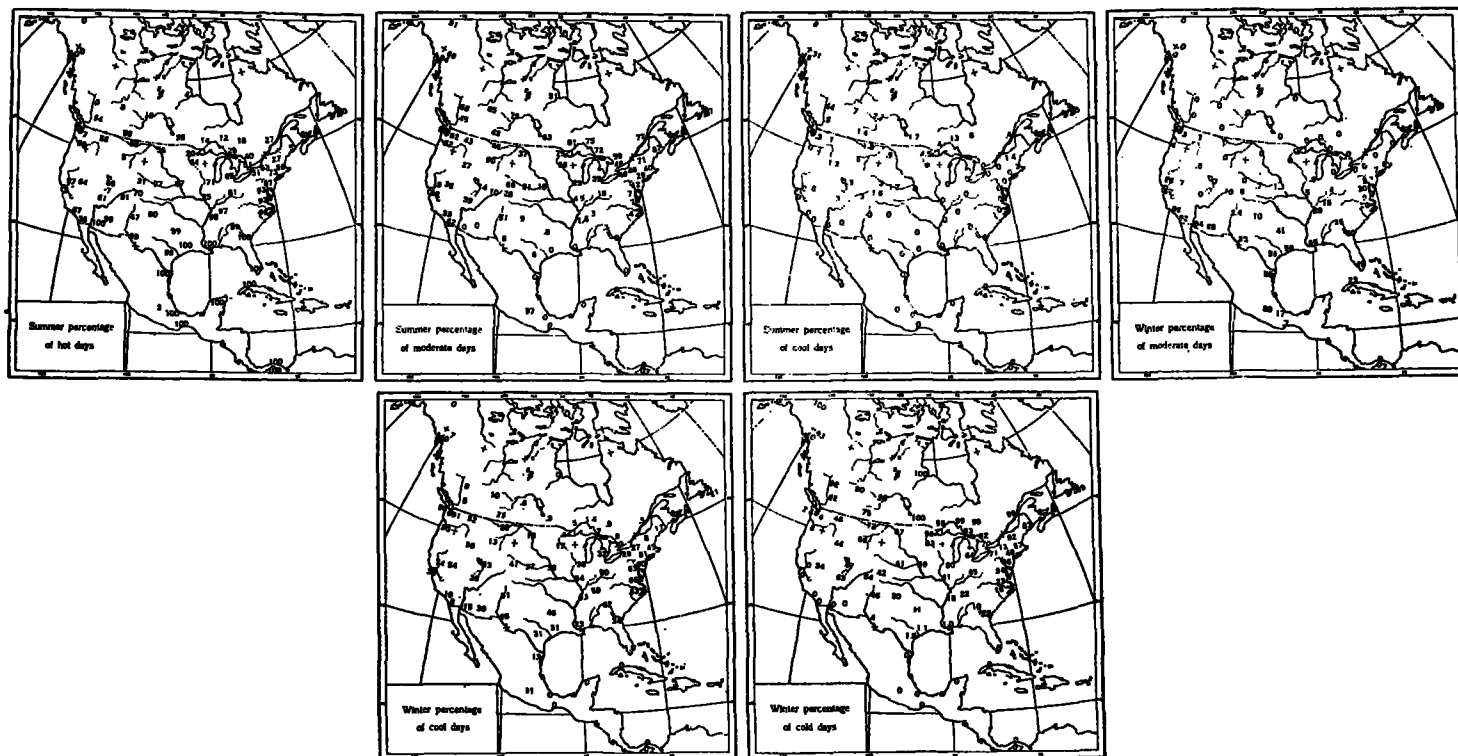
FIG. 1.—Percentage occurrences of three summer temperature types and three winter temperature types, based on mean daily temperature. (See criteria in text)
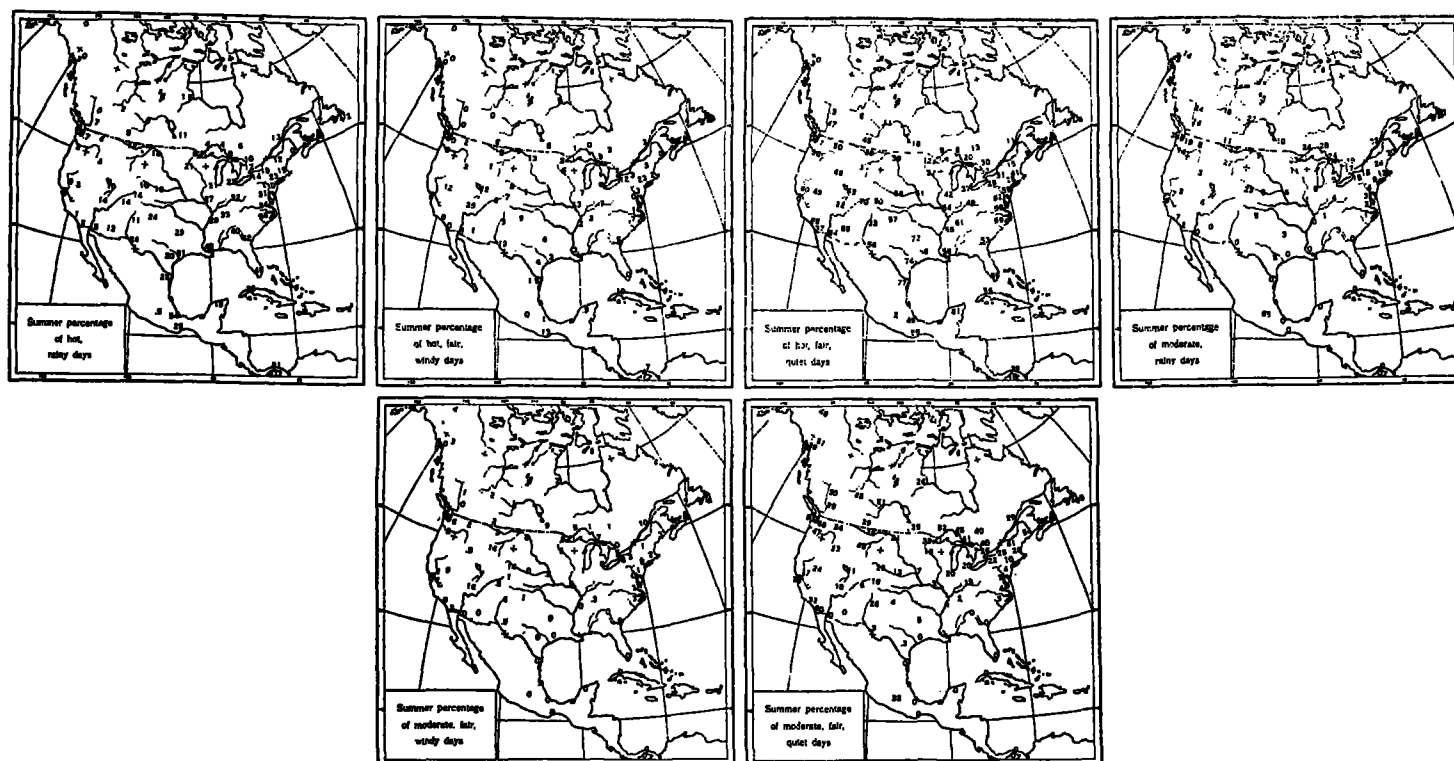
FIG. 2.—Percentage occurrences of six summer weather types. (See criteria in text)

FIG. 3.—Percentage occurrences of eight winter weather types.   (See criteria in text)

FIG. 4.—Summary of percentage occurrences of the various weather types, for summer and winter, in Herbertson's Major Natural Regions of North America

TABLE 1.—*Percentage frequencies of weather types for selected stations in North and Central America*

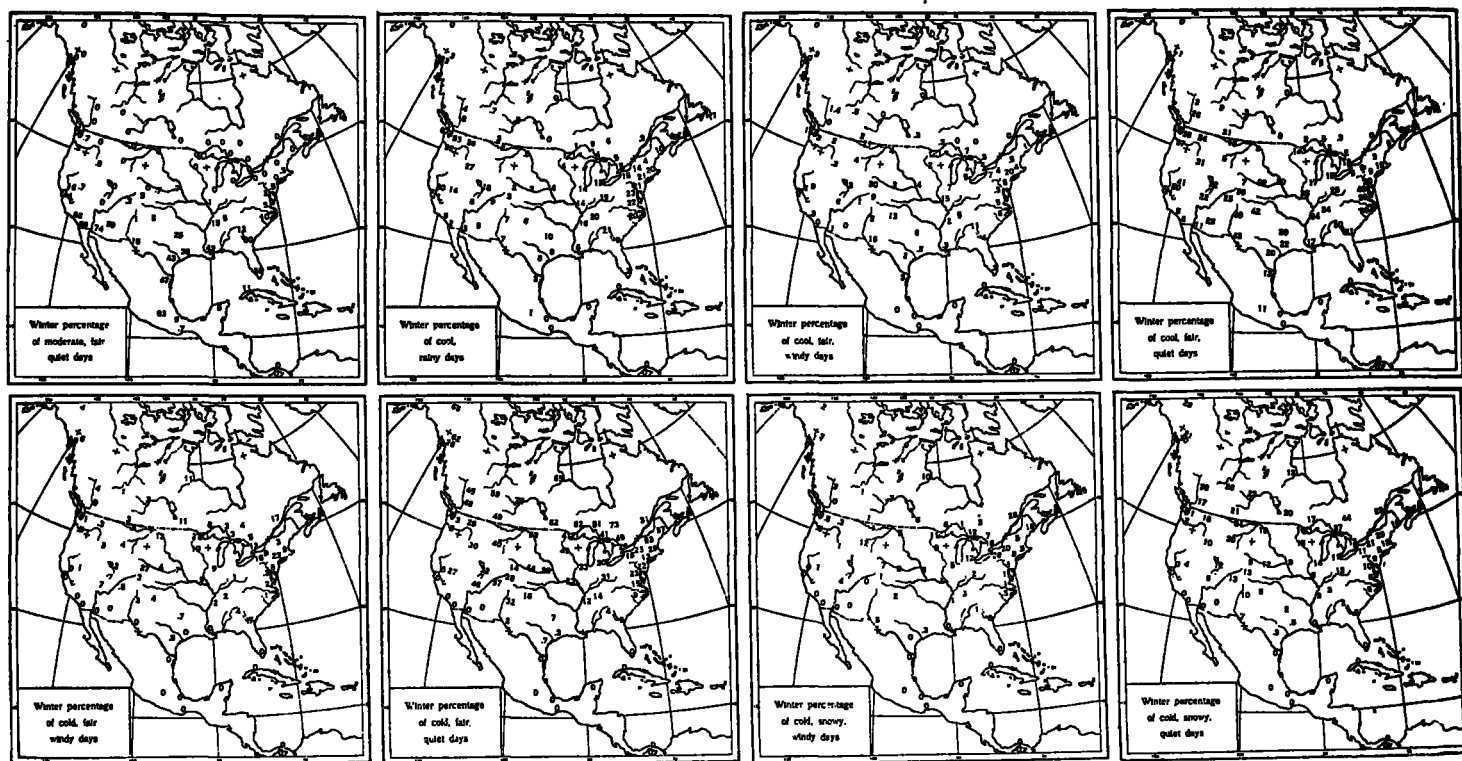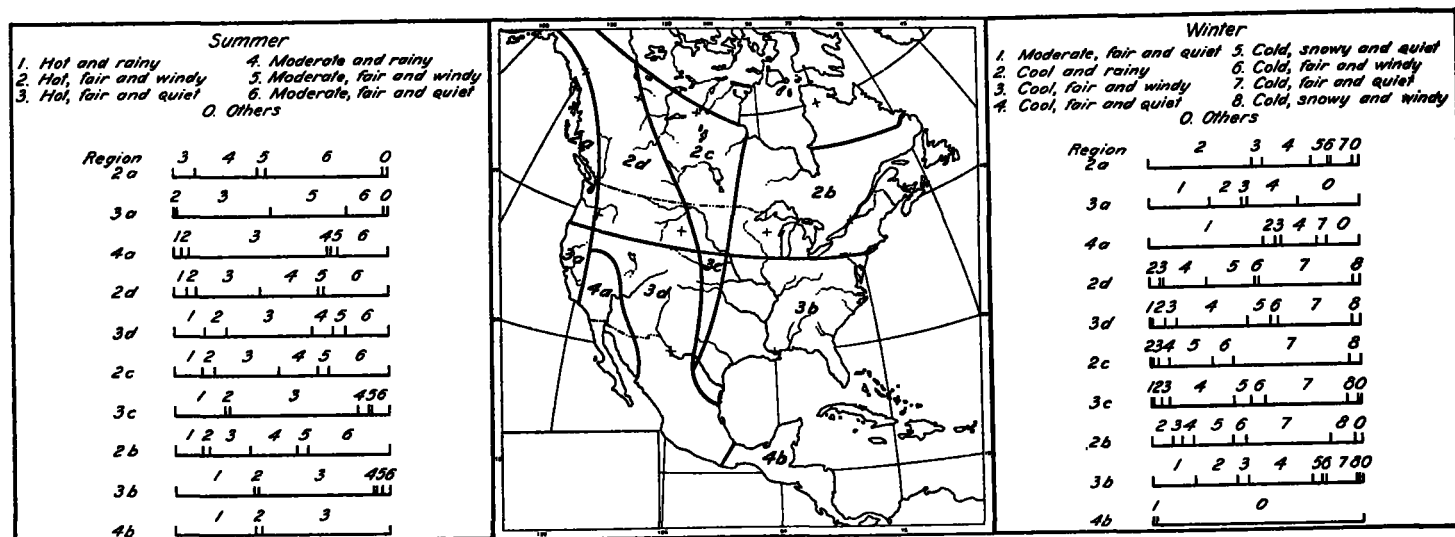| Station	Summer Hot	Moderate	Cool	Fair	Windy	Hr	Hfw	Hfq	Mr	Mfw	Mfq	Clr	Clfw	Cllq	Winter Moderate	Cool	Cold	Fair	Windy	Hr	Hfw	Hfq	Mr	Mfw	Mfq	Clr	Clfw	Cllq	Cdsq	Cdfw	Cdtq	Cdsw
Yukon Valley (1d) [1]																																
Dawson	0	91.0	8.0	58.0	5.0	0	0	1.1	39.0	4.3	48.2	3.0	0.7	4.3	0	0	100	69.0	6.0	0	0	0	0	0	0	0	0	0	28.4	3.7	65.5	1.8
Cool temperate west coast (2a)																																
Juneau	0	84.0	15.4	86.0	0	0.3	0	0.3	44.6	0	39.3	13.5	0	1.9	0	40.0	60.0	35.0	3.0	0	0	0	0	0	0	32.8	0	7.0	20.5	2.4	25.9	1.1
Tatoosh	0	95.0	4.5	63.0	8.0	0	0	0.3	34.5	8.2	53.0	2.0	0.3	2.0	0.3	96.0	2.6	31.0	18.0	0	0	0	0.3	0	0.7	67.2	16.2	13.1	0	1.4	0.7	0.5
Seattle	7.0	92.0	0.3	81.0	6.0	0.7	0	6.7	18.5	5.9	68.5	0.3	0	0	3	91.0	4.0	41.0	4.0	0	0	0	2.6	0	0.7	53.4	2.6	35.2	1.0	1.0	2.6	0.5
Portland, Oreg	38.0	62.0	0	84.0	0	1.8	0	36.3	14.3	0	47.2	0	0	0	4	90.0	6.0	41.0	3.0	0	0	0	4.3	0	0.3	52.0	0.7	37.2	1.8	0.5	2.8	0.5
Rocky Mountains (2d)																																
Atlin	0	69.0	31.0	75.0	5.0	0	0	0	14.5	3.3	51.4	9.5	1.1	19.5	0	7.0	93.0	72.0	12.0	0	0	0	0	0	0	2.7	2.9	1.4	21.3	5.9	61.9	3.2
Barkerville	0	55.0	44.0	45.0	1.1	0	0	0.2	23.8	1.1	30.5	30.3	0	13.5	0	8.0	92.0	53.0	9.0	0	0	0	0	0	0	4.0	1.4	2.9	38.4	4.3	45.2	3.0
Kamloops	54.0	45.0	0.5	75.0	0	6.8	0	47.0	16.3	0	28.3	0.5	0	0	0	8.0	92.0	75.0	0	0	0	0	0	0	0	7.9	0	26.3	16.6	0	48.5	0
Spokane	56.0	43.0	1.0	87.0	4.0	4.1	2.0	50.3	8.2	1.8	33.7	0.7	0	0.3	0.3	52.0	46.0	55.0	4.0	0	0	0	0.3	0	0	25.6	2.4	24.0	16.3	0.3	28.6	0.3
Cheyenne	31.0	66.0	2.9	67.0	22.0	9.8	8.2	12.9	22.8	13.9	29.1	0.7	1.2	1.0	0	41.0	59.0	78.0	64.0	0	0	0	0	0	0	2.4	30.0	6.7	8.9	27.0	14.3	7.3
Yellowstone	5.0	90.0	5.0	70.0	15.0	1.0	1.0	3.0	27.5	14.0	48.4	1.7	0	3.3	0	13.0	86.0	53.0	20.0	0	0	0	4.6	3.7	5.0	30.0	4.0	39.8	12.3			
Denver	70.5	27.7	1.6	77.0	8.0	14.0	6.7	49.8	8.2	1.0	18.5	1.0	0.3	0.3	8.0	50.0	42.0	81.0	14.0	0	0	0	1.6	4.8	2.6	9.5	38.5	13.5	2.8	25.2	1.0	
Grand Junction	91.2	9.5	0.3	83.0	7.0	13.8	6.2	70.2	3.0	0.5	6.0	0	0	0.3	10.0	34.0	64.0	77.0	1.3	0	0	0	0.3	0.3	8.9	1.0	24.8	13.2	0.5	50.8	0	
Northern interior (2c)																																
Edmonton	8.0	85.0	7.0	57.0	2.0	2.2	0	5.7	37.9	1.8	45.3	3.2	0.3	3.5	0	10.0	90.0	69.0	3.0	0	0	0	0	0	0	0.7	0.5	9.0	28.0	1.1	58.7	1.3
Prince Albert	18.0	79.0	2.7	66.0	2.6	5.7	1.1	10.9	27.0	1.5	51.0	0.9	0	1.8	0	0.6	99.0	76.0	1.0	0	0	0	0	0	0	0.3	0	0.3	22.6	0.3	75.5	0.7
Port Nelson	4.0	51.0	44.0	63.0	13.0	1.5	1.3	1.3	17.3	7.5	26	16.1	4.5	22.2	0	0	100.0	76.0	21.0	0	0	0	0	0	0	0	0	0	12.9	11.0	65.5	9.7
Winnipeg	35.0	63.0	1.7	60.0	15.0	10.9	5.7	18.0	18.3	9.2	36.0	0.5	0.3	0.9	0	0.3	99.0	73.0	18.0	0	0	0	0	0	0	0	0	0	19.8	11.4	61.7	6.3
Northeast (2b)																																
Port Arthur	14.0	81.0	4.0	68.0	7.0	4.1	1.1	9.1	23.8	5.0	52.4	0.7	0.5	3.0	0	5.0	95.0	74.0	15.0	0	0	0	0	0	0	1.5	0.3	2.9	17.5	8.1	62.3	6.5
Duluth	20.5	74.6	4.5	64.0	11.0	6.0	2.8	11.7	27.8	7.6	39.2	2.4	0.7	1.4	0	4.0	96.0	71.0	39.0	0	0	0	0	0	0	1.4	1.0	1.4	16.4	27.4	41.0	11.2
Minneapolis	64.0	35.9	0	66.0	11.0	21.4	5.2	37.3	11.5	5.4	19.0	0	0	0	0	17.0	83.0	72.0	20.0	0	0	0	0	0	0	3.6	2.4	10.4	15.2	10.6	49.0	7.9
Sault St. Marie	28.5	72.1	5.1	70.0	8.0	7.7	0.9	19.9	23.6	7.1	41.4	2.1	0.9	2.1	0	7.0	93.0	47.0	16.0	0	0	0	0	0	0	3.7	0.7	2.1	37.1	3.5	40.7	11.6
Cochrane	18.0	73.0	8.0	57.0	1.3	5.8	0.2	12.6	32.1	1.1	39.9	3.5	0	4.1	0	0.9	99.0	77.0	7.0	0	0	0	0.6	0	0.3	21.1	4.1	72.8	2.9			
White River	12.0	75.0	13.0	64.0	1.7	3.6	0	1.7	35.4	1.5	45.3	3.6	0.2	28.4	0	1.4	98.0	52.0	1.6	0	0	0	0.9	0	0.5	44.5	0.3	51.3	1.3			
Parry Sound	40.0	59.0	0	70.0	0.2	10.4	0.2	29.6	18.9	0	40.1	0	0	0.2	0	8.0	92.0	56.0	12.0	0	0	0	5.3	0.3	2.3	1.4	4.9	49.5	7.0			
Toronto	51.0	48.0	0	65.0	6.6	17.3	1.8	32.2	16.9	4.8	26.4	0	0	0	0	30.0	70.0	53.0	33.0	0	0	0	14.5	3.6	12.4	13.3	11.8	25.7	18.3			
Syracuse	53.0	46.0	0	64.0	7.0	18.8	3.0	31.4	17.6	3.4	25.0	0	0	0	0	27.0	73.0	45.0	34.0	0	0	0	13.6	4.1	8.1	20.8	9.5	23.4	19.9			
Quebec	27.0	72.0	0.5	54.0	13.2	12.9	3.0	11.4	32.1	10.2	29.4	0.2	0	0.2	0	0.3	99.0	48.0	45.0	0	0	0	0.3	0	0	22.5	17.5	31.0	27.8			
Northfield	27.5	70.8	1.4	59.0	1.7	12.0	0.3	15.2	28.4	1.4	41.0	0.7	0	0.3	0	8.0	92.0	60.0	9.0	0	0	0	4.5	0.5	3.0	28.9	3.4	53.3	5.4			
St. Johns	10.0	67.0	23.0	58.0	5.0	1.2	0.3	8.3	27.4	4.1	35.4	13.3	0.3	10.3	0	21.0	89.0	49.0	26.0	0	0	0	17.0	2.1	2.0	17.6	8.9	36.3	15.4			
Eastport	0.5	87.0	4.5	68.0	3.0	0	0	0.5	30.3	3.0	53.5	3.2	0.3	1.0	0	17.0	83.0	56.0	31.0	0	0	0	10.4	1.0	5.2	16.0	12.7	37.3	17.8			
California (3a)																																
Sacramento	82.0	18.7	0	99.0	2.6	0	1.4	80.5	0.7	1.2	16.8	0	0	0	25.0	74.0	0	71.0	6.0	0	0	7.9	1.4	15.8	19.9	4.3	50.1	0	0	0	0	
San Francisco	2.5	97.5	0	99.0	76.0	0	1.4	1.0	0.5	74.2	23.4	0	0	0	67.0	33.0	0	68.0	3.4	0	0	20.0	2.4	44.1	11.2	1.0	20.7	0	0	0	0	
Los Angeles	67.5	33.2	0	98.0	0	1.0	0	66.5	0.7	0	32.5	0	0	0	86.0	10.0	0	78.0	1.3	0	3.9	17.2	1.0	67.8	4.8	0.3	4.8	0	0	0	0	
Cool plateau (3e)																																
Boise	72.4	26.7	1.3	92.0	0.8	4.1	0.3	68.0	3.4	0.5	22.8	0.3	0	1.0	0.8	58.0	44.0	62.0	1.6	0	0	0.3	0	0.5	26.7	0.3	30.6	10.0	0.3	30.2	1.0
Reno	63.8	35.9	0	94.0	21.0	2.8	12.0	49.0	2.6	9.4	23.9	0.3	0	0.3	0	75.4	34.0	78.0	11.0	0	0	0	0.7	14.4	8.7	41.0	4.3	1.2	27.0	1.2	
Salt Lake City	86.0	14.0	0	87.0	13.0	10.2	12.2	63.3	2.2	0.7	11.1	0	0	0.3	0	53.0	47.0	68.0	6.0	0	0	0	17.7	2.8	31.6	12.0	1.6	32.5	1.4	
Modena	61.0	39.0	0	80.0	42.0	13.5	25.4	22.0	6.0	16.3	17.9	0	0	0.3	0	36.0	63.0	81.0	17.0	0	0	0	7.9	6.2	21.6	6.5	7.0	45.9	3.9	
Warm plateau (3d)																																
Santa Fe	47.0	51.0	0	67.0	8.0	11.3	2.8	32.6	21.1	4.5	26.3	0.5	0	0	2.4	51.0	46.0	80.0	9.0	0	0	1.2	0	1.2	7.2	5.0	38.6	10.1	3.2	31.9	1.2
El Paso	99.0	0.8	0	76.0	20.0	23.6	19.1	56.2	0	0.5	0.3	0	0	0	30.0	65.0	4.0	88.0	27.0	0	0	2.0	9.9	17.6	6.7	16.4	43.0	0.7	0	2.4	0.5
Mexico City	2.5	97.5	0	34.5	0	0.5	0	2.0	65.0	0	32.7	0	0	0	89.0	11.0	0	94.0	0	0	0	5.0	0	82.6	0	0	0	0	0	0	0
Southwestern desert (4a)																																
San Diego	38.0	62.4	0	98.0	0.3	0.5	0	37.3	1.8	0.3	60.3	0	0	0	92.0	8.0	0	76.0	1.6	0	0	20.5	1.6	69.5	2.4	0	5.6	0	0	0	0
Yuma	100.0	0	0	95.0	1.2	5.4	1.2	93.9	0	0	0	0	0	0	84.0	15.0	0	91.0	6.0	0	0.5	5.0	4.8	74.4	2.8	1.0	11.0	0	0	0	0
Phoenix	99.7	0.3	0	86.4	1.2	13.3	1.2	85.2	0	0	0	0	0	0	69.0	30.0	0	86.0	1.4	0	0.3	8.9	1.4	59.0	5.0	0	25.0	0	0	0	0
Great plains (3c)																																
Medicine Hat	56.0	43.0	1.4	80.0	8.0	5.2	5.7	44.9	11.2	2.3	29.0	0.5	0	0.9	0	25.0	75.0	75.0	7.0	0	0	0	0	0	2.6	2.0	20.7	21.1	3.5	48.8	1.1
Havre	56.3	41.8	1.8	74.0	8.0	11.7	5.2	39.4	12.4	3.0	26.4	1.2	0.3	0.3	0	28.0	72.0	75.0	17.0	0	0	0	0	0	1.6	10.6	15.5	21.4	5.0	44.0	1.4
Bismarck	59.0	37.0	0.9	77.0	20.0	14.1	12.7	31.9	8.6	7.8	21.4	0.3	0.3	0.3	0	13.0	87.0	77.0	22.0	0	0	0	0	0	0.5	3.6	7.7	15.8	13.1	53.1	5.2
North Platte	77.2	21.1	1.7	72.0	1.2	18.0	1.2	58.0	8.2	0	12.9	1.4	0	0.3	0.7	37.0	61.0	83.0	8.0	0	0	0.7	2.2	3.4	31.6	12.1	3.6	44.1	1.6	
Omaha	86.7	13.1	0	69.0	1.5	25.1	1.0	60.6	5.9	0.5	6.7	0	0	0	1.3	39.0	59.0	81.0	17.0	0	0	0.3	0	4.5	3.9	30.5	7.7	5.0	38.7	5.4	
Amarillo	90.0	9.0	0	71.0	0	24.5	9.1	56.9	4.8	1.0	3.6	0	0	0	10.0	61.0	30.0	85.0	23.0	0	0	0.3	4.8	5.2	6.2	13.1	41.7	8.1	4.1	16.3	1.6
Dallas	99.0	0.8	0	77.0	4.0	22.7	4.5	72.2	0.3	0	0.5	0	0	0	41.0	46.0	11.0	79.0	14.0	0.3	1.0	7.9	7.0	26.1	9.9	6.2	30.5	2.2	0.7	7.2	0.5
San Antonio	99.0	0.6	0	80.0	6.0	19.1	6.2	74.2	0.3	0	0.3	0	0	0	59.0	31.0	0	77.0	7.0	0.5	6.7	12.0	3.9	42.9	8.4	2.4	20.4	0.3	0.5	0.7	0
Humid southeast (5b)																																
Chicago	70.6	29.2	0	61.0	9.0	20.8	7.3	42.5	7.8	1.4	20.0	0	0	0	0.6	38.0	60.0	66.0	22.0	0	0	0.3	0.3	0	13.8	7.2	16.6	13.8	8.9	33.4	5.0
Detroit	65.0	34.6	0	65.0	20.1	8.6	6.5	36.7	8.9	5.6	20.1	0	0	0	0	32.0	64.0	62.0	28.0	0	0	0	0.3	0	15.5	1.1	22.0	30.3	11.6			
Buffalo	51.0	48.0	0	68.0	20.0	13.9	11.9	25.0	18.0	8.4	22.0	0	0	0	0	29.0	71.0	54.0	52.0	0	0	0	15.5	7.5	5.0	11.2	16.3	15.3	28.3			
Boston	58.7	40.0	0.3	62.0	4.0	15.2	2.4	41.1	12.7	1.6	25.6	0.3	0	0	0.6	43.0	56.0	62.0	18.0	0	0	0.3	0	0.3	19.6	3.9	19.0	11.9	9.9	29.1	5.0
Philadelphia	87.0	12.0	0	66.0	4.0	29.6	2.8	55.0	4.3	1.2	6.7	0	0	0	2.7	60.0	36.0	62.0	16.0	0	0	2.2	0	0.5	21.8	4.2	29.7	7.9	6.5	21.7	1.4
New York	73.0	27.0	0	68.0	31.0	22.8	22.8	28.1	9.0	8.2	9.9	0	0	0	0.7	51.0	48.0	64.0	51.0	0	0	0.7	0	0	21.4	20.3	8.9	5.0	22.6	12.9	8.4
St. Louis	95.0	4.5	0	71.0	14.0	27.4	13.5	54.1	1.2	0.5	2.8	0	0	0	5.0	54.0	41.0	75.0	29.0	0	0	1.2	2.4	1.4	14.6	25.2	6.0	3.0	35.1	2.0	
Cincinnati	81.0	18.0	0	65.0	0	7.3	1.5	8.0	7.0	49.0	3.6	0	14.9	0	4.0	50.0	45.0	63.0	5.0	0	0	2.4	0	1.4	19.3	2.2	27.9	12.9	1.0	30.7	1.8	
Baltimore	93.0	6.8	0	66.0	0	31.0	0	62.0	3.4	0	3.4	0	0	0	3.0	63.0	34.0	65.0	1.6	0	0	1.4	0	1.8	22.6	0.3	40.3	10.0	0.3	22.1		
Richmond	93.0	7.0	0	63.0	1.5	34.5	1.2	57.8	2.2	0.3	4.1	0	0	0	9.0	66.0	23.0	65.0	10.0	0	0	4.5	1.6	3.2	22.3	5.0	39.5	5.9	1.6	14.9	1.0
Memphis	98.0	1.4	0	71.0	2.2	28.3	2.2	68.5	0	0	0	0	0	0	28.0	53.0	18.0	68.0	10.0	0	0.3	10.9	2.2	15.3	16.4	2.4	33.9	3.0	2.0	11.9	1.2
Nashville	97.0	3.0	0	67.0	4.0	32.5	3.4	61.0	1.0	0.3	2.0	0	0	0	18.0	59.0	22.0	64.0	13.0	0	0	9.1	3.6	5.4	19.5	4.8	34.5	3.0	1.8	14.0	3.0
Raleigh	96.0	4.0	0	63.0	1.0	36.2	0.7	59.1	1.0	0.3	2.8	0	0	0	20.0	63.0	16.0	66.0	10.0	0	0	7.7	2.0	10.2	19.2	5.9	37.8	5.2	1.2	9.5	0.3
Atlanta	99.0	0.3	0	59.0	6.0	40.3	5.6	53.5	0.3	0	0	0	0	0	26.0	62.0	10.0	62.0	17.0	0	0	0.3	11.6	2.4	21.4	11.4	29.6	1.6	3.6	6.3	1.2
Savannah	100.0	0	0	58.0	5.0	42.0	5.0	52.8	0	0	0	0	0	0	60.0	34.0	2.6	69.0	15.0	1.0	0.7	1.6	19.4	10.2	30.2	9.4	4.1	20.8	0.3	0.7	1.6	0
Houston	100.0	0	0	69.0	2.6	30.9	2.6	66.9	0	0	0	0	0	0	58.0	31.0	1.1	70.0	6.0	1.8	1.4	6.5	17.6	8.0	37.6	8.4	0.5	21.7	0.5	0	0.3	0.3
New Orleans	100.0	0	0	57.0	0	3.43	0	0.3	56.4	0	0	0	0	0	65.0	23.0	1.0	68.0	0.3	3.0	0	7.5	22.1	0	43.1	5.6	0	16.9	0	0	1.0	0
Miami	100.0	0	0	55.0	0	44.7	0	55.0	0	0	0	0	0	0	49.0	1.6	0	78.0	3.0	12.7	1.0	37.0	9.1	1.8	37.8	0.3	0.3	1.0	0			
Trade-wind region (4b')																																
Habana	100.0	0	0	67.0	10.4	33.0	10.4	55.7	0	0	0	0	0	0	23.0	0	0	80.0	16.0	13.5	10.7	49.7	6.0	5.7	10.9	0	0	0	0	0	0	0
Matamoros	100.0	0	0	78.5	1.5	21.8	1.5	77.0	0	0	0	0	0	0	56.0	13.0	0	88.0	8.0	1.3	4.0	24.8	7.5	1.7	46.8	1.2	0	9.6	0	0	0	0
Vera Cruz	100.0	0	0	46.5	1.0	53.5	1.0	45.3	0	0	0	0	0	0	17.0	0	0	88.0	17.0	11.1	2.6	60.0	2.1	5.6	9.1	2.9	2.7	7.0	0	0	0	0
Progreso	100.0	0	0	81.5	3.1	8.6	0.3	81.0	0	0	0	0	0	0	7.0	0	0	94.0	2.0	5.6	0.3	37.3	0.3	1.0	5.2	0	0	0	0	0	0	0
Salina Cruz	100.0	0	0	72.0	13.3	28.0	13.3	0	0	0	0	0	0	0	0.7	0	0	69.0	43.0	12.0	53.7	12.4	32.9	0	0	0	0	0	0	0	0	0
Cristobal	100.0	0	0	19.4	0.7	80.6	0.7	18.2	0	0	0	0	0	0	46.0	12.0	0	53.7	12.4	32.9	0	0	0	0	0	0	0	0	0	0	0	0
Balboa Heights	100.0	0	0	39.5	0.7	60.7	0.7	38.6	0	0	0	0	0	0	84.0	11.0	0	16.0	18.0	61.7	0	0	0	0	0	0	0	0	0	0	0	0

[1] The number and letter designations correspond to those of A. J. Herbertson's Major Natural Regions, Oxford Wall Maps, 1922, Oxford University Press.